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ABSTRACT

Newly adopted objectives for improving Arizona graduate educational efforts for student teachers in remote, rural areas are presented, specifically regarding the increased use of current information technology resources, such as television and computer modem courses. Current options as well as future possibilities are considered, such as partnerships, cohort groups, and advanced technological delivery systems (ATDS). Successful implementation of new technologies for teaching and learning requires that even faculty who are not directly involved in such programs should be made aware of them, as many everyday, local challenges may be addressed with similar technological innovation. It is concluded that holistic assessment and formative evaluation are crucial to program accountability and the continued success of a university program dispersed to remote regions and foreign borders. Appended exhibits, which comprise half the document, include the actual plan of the system to be implemented; media articles that prompted the review; pilot program description; research findings on cohort programs; and an evaluation of a modem-conducted, graduate ATDS. (NAV)

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ED 392 756

# A UNIVERSITY DISPERSED

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## INNOVATIONS IN THE DEVELOPMENT OF COHORT PROGRAMS & MULTIPLE COURSE DELIVERY SYSTEMS

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## Critical Factors in the Development and Evaluation of Innovative Programs to Meet Students' Educational Needs

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# INNOVATIONS & CHANGE IN THE DEVELOPMENT, IMPLEMENTATION AND EVALUATION OF GRADUATE COHORT PROGRAMS AND MULTIPLE COURSE DELIVERY SYSTEMS

## Introduction

Changing the way universities are structured and how they deliver programs and courses to diverse populations in dispersed, sometimes remote locations shakes up all elements of the system. This is particularly true for those professors and bureaucratic units which are staunchly entrenched in the past traditions of academe. While it is very difficult to be successful with innovation in the "traditional" university system, it can and will be done. The success of these innovations in delivering programs and courses to people where they need them is essential to the survival of on-campus programs in order for traditional faculty positions to survive and flourish.

State citizens (organizations, groups and students), governing boards, legislators, university administrators and innovative faculty leaders are rapidly influencing this change. Graduate students can no longer quit their jobs and come to a far-away campus to work on a program and for a faculty member/s for 3 or 4 years or more. Faculty and limited resources can no longer serve these diverse needs and meet mission directives. They can no longer jump in a car or airplane and teach courses two to three hundred miles away and return that same night to teach on-campus classes. It's simply too expensive in dollars and equipment -- and particularly, in burned-out faculty members.

## Innovation and Change in Course Delivery Systems

There is no choice: innovation and change is being required by the organization and the total social structure. At the same time, there are faculty who have been leading the way on their own. At times these forward-looking faculty have been supported in their efforts, but much of what has been done initially has met with resistance of other faculty members and bureaucratic elements. Some faculty, steeped in tradition, are convinced that the only

way to teach students is to lecture to them in an on-campus classroom; students must come to the master and savor every word. Some are threatened and fearful of having to adjust to other modes of content delivery. For example, it's been particularly difficult for assistant professors to innovate when an associate or full professor who is unsupportive of such innovation may be in a position to evaluate lower-ranked faculty progress. While these internal realities are evident, the institution will adjust; evaluations and resources will turn to the required innovations of delivery to meet the needs demanded by its constituency.

## New Administration, New Planning, & New Mission

Along with the new administration, the total mission and key objectives (including total institutional and program planning components) are undergoing rapid adjustments and change. Goals within the new mission statement include the following visionary objectives:

- To become recognized as a national leader in partnerships with community colleges and K-12 education,
- To become recognized as a national leader in the use of technology for distance learning,
- To be recognized nationally and internationally for research and graduate programs that build from our regional base on the Colorado Plateau and our work with communities throughout rural Arizona.

In July of 1995, the Arizona Board of Regents adopted objectives for 1995-1996 which targeted "capitalizing on new and emerging technologies to improve teaching, learning, and service outcomes. The following are specific objectives of this governing body which are relevant to this paper:

- Conduct and present a study on the implications of information technology as a strategic resource for improving university teaching, learning, research, and service outcomes.
- Facilitate the development and presentation of a systemwide information technology plan describing planning assumptions and goals. This plan should be based upon university planning documents, enrollment projections and related information.
- Facilitate collaboration in developing and presenting university information technology budget requests for FY 1997.

- Develop and present an analysis of university collaboration and mechanisms for coordination of information technology.

President Clara Lovett's "NAU Strategic Plan," which was a recent draft presented to NAU's governing body, includes the following related plans:

- To assure access to public university education for all qualified residents of Arizona
- To enhance NAU's mission to provide educational opportunities to rural Arizona via telecommunications and on-site faculty.
- To increase the number of students served through NAUNet sites. (See Exhibit A for the Current/Planned NAUNet sites System).
- To increase US-Mexico joint initiatives (for economic development of the region).

As a result of these administrative and program initiatives, there has been an astounding increase in enrollment beyond the NAU campus in Flagstaff. The growth of full-time students outside of Flagstaff this year was approximately 20%, and the projections are for the number of students in this category to significantly increase in the future. Dr. Dave Markee, NAU vice president for institutional advancement, reported that the reason for this rapid growth is that NAU has partnered up with community colleges in their neighborhoods (See Exhibit B for the Arizona Daily Sun, Friday, October 6, 1995 article on: "NAU enrollment beyond Flagstaff soars").

## The Developmental Process Toward a Campus Dispersed

During a relatively limited period of time, the Northern Arizona University mission has been redefined and broadened in scope. There were the usual organizational changes in top administration, along with the governing board's directives to meet student needs across the state and region. No additional faculty resources were made available; yet, with the advent of ITV and computer delivery technology in conjunction with extended partnerships and cohort programs, the university has been able to take on the challenge and move ahead. Of course, this means rapid change, which can result in much anxiety and fear on the part of personnel throughout the organization. The intent of this paper is to

more specifically address progress which has been made to enable the institution to become successful in meeting its mission, and to address those key internal and external components to be evaluated, formatively & summatively, throughout their natural developmental stages.

**Emergence of Partnership Programs and Expanded Campuses**

There have recently been several partnership programs developed to serve the needs of undergraduate teaching professionals and graduate educational leaders. For example, an all-Hispanic doctoral program has been developed in conjunction with the Arizona Hispanic Administrators Association. While this partnership is in its infancy in terms of development of specific responsibilities, it is an exciting concept which will provide a significant number of Hispanic doctorates in a region which merits more appropriate representation for the changing socio/economic realities of the area. In other sections of this paper, pilot-test cohort doctoral programs will be discussed in more depth (See the "Estrella Cohort Grid" on the last page of Exhibit C).

The NAU partnership with Arizona Western College (AWC) in Yuma, Arizona has expanded to a shared campus (2 plus 2 programs, master's and doctoral-level programs). This "education park" already includes AWC, NAU in Yuma, and one elementary school, with additional elementary, middle and high schools being planned. NAU has "broken ground" for a new building at the partnership site in September of 1995.

**An Important Partnership in Meeting A Key University Mission**

A critical mission of Northern Arizona University in Flagstaff is to provide educational opportunities to the rural communities of Arizona. To meet the diverse educational needs in rural Arizona, NAU has joined in a partnership arrangement with selected community colleges throughout the state. In 1988 the first formal agreement between a university and a community college to provide educational opportunities jointly was made available in Yuma, Arizona, the third-fastest growing city in the United States.

Dr. Karen Cotera, Coordinator of Education Programs at Northern Arizona University in Yuma, has been a key player in the rapid development of this unique extended campus partnership. NAU in Yuma is a partnership with Arizona Western College, a community college, which offers lower division coursework, with NAU in Yuma offering upper division and graduate coursework.

The small number of full-time faculty in the first years of operation limited the course and program choices available. This need, together with the statewide mission of service, prompted NAU to pioneer and develop an instructional interactive television system (IITV) which permitted students in Yuma to receive instruction and interact with students in Flagstaff and at other sites. This system enables us to offer courses for which there might be limited enrollment or no instructor locally available.

Microwave transmission has provided a major strength of this system as compared to a standard satellite system: instantaneous responses to professor and student questions. State-of-the-art cameras positioned strategically in the front of the classroom enable the faculty member, physically located at a distant site, to see and identify individual students pictured on a large screen television. Individual microphones enable each student to be heard.

Faculty are strongly encouraged by the University administration to offer courses over the IITV system. They participate in a training program during the semester prior to their first semester of transmission. Technical support is provided to assist faculty in the preparation of visuals, copyright clearances, and custom video taping.

The NAUNET system has blossomed in the last few years from one receiving site to fourteen receiving sites. Courses currently originate in Flagstaff and Yuma and are sent to four or more sites. With the success of the NAU network, AWC began its interactive television network (ITN) with receiving sites in Yuma and La Paz counties. Our partnership has enabled NAU in Yuma to transmit courses to locations on the AWC ITN system which are not a part of the NAUNET system. There are currently three IITV/ITN

classrooms on campus. With the completion of our new multipurpose facility, six classrooms will be available for receiving and transmitting instruction for NAU and AWC.

A number of the public schools in Yuma County have adopted year-round and multi-track year-round calendars. This change has necessitated additional local course offerings and thus an increased need for IITV, computers, modems, and other technologies as our student population is becoming more place-bound. We are moving toward the inclusion of computers in courses offered over the television systems, either simultaneously through online systems or by modem. The new multipurpose facility will house a computer lab with 135 stations, two computer classrooms, and classrooms with data capabilities.

**Delivery of Graduate Courses and Programs with Limited Resources**

Within a two-year period, the university reached its resource limits and could no longer deliver programs and courses which met the needs of today's students. While officials were upgrading the technological base, some colleges, departments and faculty were making headway with development of partnerships and cohort groups in dispersed locations, and adjusting course content and methodology to include teaching on television and through computer delivery.

**Development of Cohort Programs in Educational Leadership**

The educational leadership faculty has recently developed several master's and certification programs which have been evaluated as successful. Doctoral cohort groups have been formed at the Flagstaff, Colorado River Valley, Estrella, Marana, and Arizona Western locations. Students are at various levels of progress in these programs.

While the university system and individual faculty members were developing basic technological systems for the delivery of courses to locations to where the students reside, others were working within the traditional bureaucracy to upgrade program requirements which would allow for their implementation in key areas of need. The most difficult problem being experienced is not the "delivery" of courses and programs themselves;

rather, the greatest blockage has been with traditional internal structures and departments which seem not to comprehend the university mission to "disperse and serve." As a result, they fail to adjust to today's professional student need and societal demand. Lack of interdepartmental cooperation can cause serious damage to change and improvement efforts. Some departments who "own" certain courses have been very territorial in only allowing delivery of important program components through an on-campus lecture mode. The demand for the doctorate in educational leadership is extensive, but we are no longer able to ask leaders within their own organizations to quit their jobs and come to campus for a two- to three-year residency: one which may not be relevant to their profession.

Exhibit C (Educational Leadership: Pilot-Test Cohort Doctoral Programs) shows some of the results of a year's work in trying to convince the Graduate College and Graduate Council structures to allow for delivery of programs in areas outside of the NAU Flagstaff campus scene. It has been reported that many of the faculty in these councils are fearful of the program being successful, and having to deliver their programs from the "main" campus. Others have well-meaning concerns that a doctorate cannot be a quality or "real" degree unless a student comes to campus to work with key professors for a long period of time. Some do not realize that students in one program may not benefit as much from the "on-campus" experience as they would with a professional applied program in a "real" location. With today's technology and advanced information (library) systems, students no longer need to be next door to the campus library, however.

Exhibit D provides the reader with some information which will be the initial knowledge base for the long-range development and evaluation of the cohort programs. Concomitantly, background information is being collected to provide a foundation for the assessment of different qualities of the advanced technology delivery systems modes of ITV and computer delivery as they compare with traditional face-to-face procedures, individually or in combination.

## Delivery of Courses by Traditional and Advanced Technology Delivery Systems

Many courses in these programs have been successfully delivered through the traditional mode (i.e., driving to the sites), ITV, and computer modem. During the fall of 1995, a combination of these modes will be assessed for effectiveness and efficiency.

There are several faculty members gearing up to teach courses by ITV. The system now has 20 sites with multiple studios throughout Arizona, including those on American Indian Reservations and at Mexican border locations. The Arizona Western College, and other community college partners, have studios along the Colorado River, from north of the Grand Canyon at the Utah, Nevada borders, all the way to San Luis, on the Mexican border (See Exhibit A for current and planned sites).

## Successful Implementation of New Technologies for Teaching & Learning

An important part of the administrative initiatives in pulling together the "hardware" to deliver courses and programs by technological modes was to establish an "Office of Instructional Development and Faculty Growth." One of the contributors to this presentation is Marilyn Fritz, the Academic Coordinator of Instructional Delivery. One of the critical ingredients to delivery of courses is, of course, faculty who are willing and able to do so. The university has initially experienced a wait-and-see attitude on the part of many faculty members. A few who have tried these "new" methods of course delivery have been very vocal in opposition to the process: "It's too hard to teach courses by ITV or computer modem," "My particular course doesn't fit this kind of delivery," and "Where is the reward?"

For this reason, it is very important for an organization to realize the necessity of recruiting positive and dynamic communicators to assist faculty in moving into different modes and styles of course delivery. Marilyn Fritz is one of these well-placed

professionals who has made a significant contribution to our progress. In the following narrative, she provides her perspective to achieving "successful implementation of new technologies for teaching and learning.

Successful Implementation of New Technologies

There are three primary requirements that must be met in the series of events which lead to successful implementation of new technologies for teaching and learning. The first requirement is that faculty must be motivated by a perceived challenge or need which can be effectively addressed through technology. The second requirement is that faculty will have to address the technical implementation issues of selection and access to the technology: part of the technical implementation will be the need to identify and attend training and appropriate technical expertise. The third major requirement is that the institution must create an infrastructure which encourages ongoing "functional" implementation. An effective "functional" infrastructure will attach importance not just to providing access to technology, but also to allowing for release time and other forms of recognition and support.

The Office of Instructional Development and Faculty Growth at Northern Arizona University offers key programs for faculty development. Our mission states that we are "Committed to providing NAU faculty with access to resources and services that enhance the teaching and learning experience in the classroom and on instructional television." We offer workshops and seminars on topics such as cooperative learning, and on instructional technologies such as multimedia presentation software and how to teach on instructional television. Through newly established partnerships, our office serves as the primary linkage between faculty and the relevant support groups for the various technologies.

Distance Education as a Reason for Using Instructional Technologies

In certain situations, the need for technology may be largely self-evident. In the case of an institution committed to distance education, for example, it would be difficult or impossible to create an effective distance education program that does not carefully plan and incorporate new technologies in support of the program.

In distance education, "snail mail" (even "express mail") can be costly and time-consuming, particularly compared with fax machines and various computer telecommunications options. The risk of losing examinations and assignments increases with each additional participant or entity responsible for supporting this aspect of materials distribution for distance education students. Northern Arizona University currently relies primarily upon fax machines and US or express mail to send and receive these materials.

Other issues faced in dealing with distance education are how faculty can communicate with students outside of class time as well as how to foster student to student communications, not only for group work, but also to help the distance education students feel "connected" with their learning institution and peers.

While supporting computer telecommunications is a goal to support the needs as described above, the logistics of placing adequate numbers of computers in each of the remote locations is currently beyond the ability of our institution. With

most of our remote sites at local schools and colleges, who would own the computers? Where can they be placed? Who can maintain them? Who will be responsible for security? How can the telephone lines be secured from unwanted long distance calls? All of these questions and more must be addressed before we can plan to implement some of the computing and telecommunications technologies for distance education.

Motivating Faculty Who Teach in the Traditional Classroom

For those faculty who are not involved in distance education, there are other reasons for becoming involved in using instructional technologies. Some of these reasons are readily apparent to a minority of faculty. Other faculty need education and awareness about how challenges they face every day may be addressed through effective technology implementation.

Awareness building needs to come in a variety of venues, whether one on one, in the colleges, or in general campus forums. It should occur in meetings, seminars, workshops, peer consulting, guest lecture, down-link satellite broadcasts, or talks within the college. One form of education here at NAU has been the first "Instructional Technology Fair". For the entire month of October there are a series of 76 different sessions, each designed to heighten awareness about potential of technology for enhancing teaching and learning. Other forms of awareness building which we have undertaken have been intended to foster special interest group meetings consisting of faculty and, where appropriate, relevant technical support staff.

One factor in awareness building addresses the capabilities of the technology. The other factor involves inspiring faculty to see this capability as "solving a problem" more efficiently than any other means. Many professors are motivated to use technology because they believe their students need to learn about new technologies. For example, they view their students' ability to get on the Internet to learn and to conduct research as a valuable skill.

Other faculty want to use presentation software that enables them to incorporate sophisticated photographic or other images into the classroom, images that were formerly drawn on the blackboard in a time-consuming, often ineffectual rendition of the original. Faculty in large classes sometimes seek ways to foster greater student participation in discussions, whether during class or afterwards. One strategy is to use on-line discussion groups or bulletin boards. Still others want to provide a variety of media and methods in their teaching, both to improve the quality of teaching through following a time-tested "vary your media and methods" approach, as well as to re-energize themselves in learning about new technologies to help create more innovative instruction.

The issues involved in building an effective strategy for implementing new technologies for teaching and learning affect a large number of people and support units. For this reason, NAU perceives coordination as a critical success factor in supporting future growth. "Coordination" implies our ongoing efforts to identify the appropriate contacts and linkages, so that when there is a problem, there will be several avenues of potential responses to this problem. We have a newly established Instructional Technology Steering Committee consisting of faculty from each of the Colleges as well as each of the relevant support units. We are currently building a campus instructional technology directory. This directory will consist of names of faculty and support staff who respond with contact

information and the types of applications under which they choose to be listed. We have established linkages with faculty who teach instructional technology skills and who can recommend students for faculty projects.

Faculty need access to equipment, for workshops. for development and for use during instruction. We now have a new Faculty Instructional Technology Studio which showcases some of the newest technology on eight new computers. The studio's configuration is evenly split between Macintosh and PC Windows. The studio offers a number of instructional technology seminars and hands-on workshops. The studio is staffed full time with two individuals. One person is primarily responsible for workshops; the other person is an instructional designer for special projects. Both regularly consult with faculty on technical issues. The studio manager (the title is "Academic Facilitator") also develops and delivers the workshops.

It is important that the person delivering the workshop be an expert in the application; yet it is unrealistic for the studio manager to become expert in all of the applications. For this reason, many of the hands-on workshops are actually delivered by the campus expert on a specific technology. For example, a scientific photographer on campus is an expert on Adobe Photoshop. We worked closely with him to develop his training materials and help him with his delivery style. He brings extensive credibility in his knowledge of the software application. The campus gains through a quality workshop delivered by an expert. The expert gains through increased recognition and credibility for his function on the campus. We have established a number of these linkages so far, and are continually looking for more experts to come and share their ideas through our facility.

One of our primary concerns is to help faculty gain the additional time they need to become involved in these efforts. We are still pursuing the possibility of a formal request for release time for varied periods depending on the project. We have begun the notion of providing support time which is offered in response to a "grant" proposal. The grant does not consist of funds given directly to the faculty member. Rather, it consists of up to 50 hours of student time. The student is paid to provide support in the technology required by the faculty member. We will also support two development grants this year. Also offered as support time, these grants must be matched equally by the department. They are designed to support "seed projects" for potential CD-ROM applications that can be marketed through a publisher. Our office is working on behalf of the faculty member to find a publisher.

Another major need is to establish a formal system of recognition and rewards for faculty who are willing to take on the additional time and effort. Currently, junior faculty receive little promise of reward, and little is assured in terms of promotion and tenure. We have met with the new Provost to ask that there be some formal system implemented to assure more rewards for innovative teaching.

In the future, we hope to implement more formal means of formative and summative evaluation. We are attempting to establish linkages with the Center for Excellence in Education, with hopes that some of their graduate students will take on evaluation of these projects as part of their degree programs.

Finally, everything described in this paper is costly. For this reason, we are learning to implement some form of external grant writing program that would facilitate our ability to bring in funding for instructional technology initiatives.

## Evaluation of the Organizational Structure and Program Delivery

When this kind of innovation and change is initiated, there is a related obligation to determine what is working well to meet the objectives, and to identify the weaknesses and necessary improvements for maximum efficiency and effectiveness. This will be a monumental task, but if we are to provide the evidence of accountability, it is absolutely necessary to assess and evaluate the total effectiveness of this educational endeavor. The following represents an initial listing of key organizational components which will require assessment and evaluation of effectiveness:

1. The Organizational Structure -- Curriculum Committees, Graduate College, Graduate Council, Continuing Education, Faculty Development, Instructional Television, Computer/Telecommunications Support, Colleges, Departments, Faculty Evaluation, College Faculty Evaluation Committees, Reward System, Partnerships, Site Coordination/Coordinators, Support Integration (Bureaucracy), etc.

2. Teaching/Learning -- Traditional (face-to-face), Instructional Television, Computer and Combinations of these delivery modes, Field Study, Cohort Groups, etc.

Program and delivery evaluations will be conducted through multiple means. Some of these include: faculty evaluation of course delivery; departmental (internal) evaluations; hired consultants, etc. Considerable evidence has already been amassed in relation to some of these delivery modes. For example, we have evidence that computer delivery by certain faculty is being touted as "the most personalized course I've ever had." We know that learning is a very personal thing, and it could be the case that "face-to-face" delivery to large groups is not the best way to think and learn about certain content. An important academic or evaluation research question is for us to determine what kinds of curriculum elements are best delivered through which mode or combination of modes.

## Evaluation of the Advanced Technological Delivery System

There are some faculty who have taken the initiative to develop and deliver courses by computer on their own. These faculty have accomplished this objective through the

development of units which are delivered by computer alone and/or in combination with traditional instructional modes. Much of the editing and revisions of doctoral proposal, prospectus and dissertation documents is being accomplished by uploading and downloading successive drafts via computers. Also, student program advisement has been found to be much more convenient through computer communications. Neither faculty or students need to schedule an appointment in someone's office at a particular time, nor does this procedure require the usual extensive travel to and from the traditional office visit.

Dr. Mary Dereshiwsky has been one of these forward-looking pioneers of development and delivery of courses by computer. Formative evaluations of her courses have resulted in the most positive feedback this researcher/evaluator has observed in his many years of teaching and administration. For this reason, we have included Dr. Dereshiwsky's "paper-within-a-paper," which may be seen in Exhibit E. The paper is titled: "As the Modem Turns:" Successes of the Advanced Technological Delivery System (ATDS) of Graduate-Level Instruction.

## In Conclusion

There are tremendous challenges to be faced when a university must meet mission requirements of disseminating education courses and programs throughout a large and diverse state, including delivery to remote regions and foreign borders. This paper deals with such innovations in maximizing use of resources through the delivery of courses and programs to diverse populations and areas through partnerships, cohort groups and advanced technological delivery systems. In conclusion, holistic assessment and formative evaluations are a crucial part of the evidence of program accountability and continuing success of this concept of a "university dispersed."

EXHIBIT A

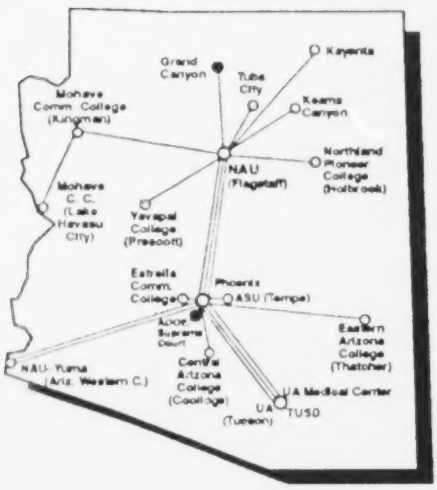
NAUNet Current/Planned System

NORTHERN ARIZONA UNIVERSITY

# NAUNET AND NAULA

## ACCESS THROUGH INFORMATION TECHNOLOGY

NAUNet Current/Planned System




### 1 NAUNet Telecommunications Network

NAUNet is a full duplex interactive microwave network. Multiple sites can interconnect with one another on the network. The first instructional sites in Flagstaff and at the NAU Center in Yuma, Arizona were completed in December 1989, followed by sites in Phoenix (ADoE/Supreme Court), Kingman (Mohave Community College), Tempe (ASU), Tucson (U of A), and Holbrook (Northland Pioneer College). Sites on the Navajo and Hopi Reservations go on-line in 1994 with the second year of support from the U.S. Dept. of Commerce's NTIA. Additional sites are planned for the following years. The system is fully interactive, and NAU plans to include T-1 data and telephony services on many circuits.

### 2 nauLA and the Satellite System

The Northern Arizona University Learning Alliance (nauLA) is a voluntary alliance of more than 100 satellite downlink, cable and wireless cable sites across Arizona for the delivery of statewide programs. Supporting nauLA is a C-band satellite transmission (uplink) system. The uplink, completed in 1990, has capability for transmission to areas that cover the contiguous 48 United States. NAU is also a founding member of IDEANET, a nationwide distance education alliance.

NAUNet Current/Planned & Proposed System Links

### 3 Interactive Television Classrooms and Control Rooms

Four interactive classrooms at NAU, two at NAU–Yuma, one at each of the other NAUNet sites, and sites at ASU, UA, and ADoE are fully operational for course delivery, and currently average 50 university credit courses of instruction each semester. Additional classrooms are under construction. The control rooms for each classroom are configured to be "user transparent." Operators using the control rooms may move from one to another with complete ease.

### 4 Television Master Control and Production/Postproduction Facilities

The on-campus center of the communications system is the broadcast quality television production studio and postproduction facility, and Master Control for NAUNet–Flagstaff, the campus-wide NAU cable television system, the "feed" to Warner Cable Channel 4 in Flagstaff, and a satellite reception facility that has Ku-Band and C-Band downlink (receive) antennas. The Phoenix hub for NAUNet is located at American Television Relay (MCI).



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# NAUNet - Current and Planned

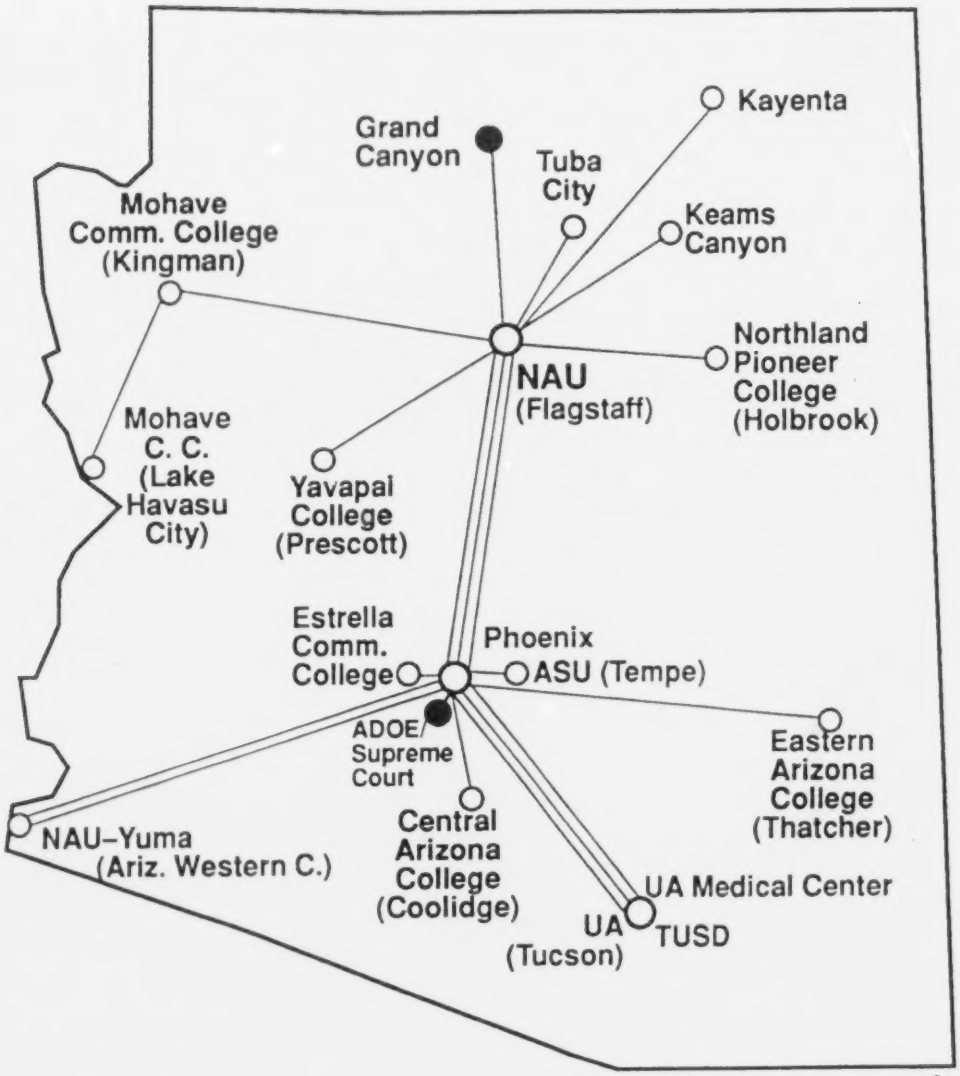


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EXHIBIT B

NAU Enrollment Beyond Flagstaff Soars

# NAU enrollment beyond Flagstaff soars

By LUKAS VELUSH
Sun Staff Reporter

Students are taking to the information highway set up by Northern Arizona University in record numbers.

Enrollment in interactive television classes and others taught beyond NAU's Flagstaff campus leaped more than 16 percent this fall, far outpacing student growth in Flagstaff.

"There has always been a slow and steady growth here on campus," said Janet Carlson, NAU coordinator for statewide academic programs. "What's happening off-campus is we're developing it."

Overall, NAU grew from 19,242 students in the fall of 1994 to 20,131 students this fall — a growth rate of 4.6 percent. On the other hand, NAU's non-Flagstaff head count jumped from 4,055 in 1993 to 4,718 in 1994, up 16.4 percent.

The growth in full-time equivalents, based on a minimum number of credit hours per student, was 1.9 percent on the Flagstaff campus and 19.9 percent elsewhere.

"This president in particular is interested in expanding into rural areas," Carlson said of NAU President Clara Lovett. "Particularly in undergraduate programs."

The reason for NAU's rapid rural growth is because it has partnered up with community colleges in their neighborhoods, said Dave Markee, NAU vice president for institutional advancement.

What NAU has done, he said, is acquire the use of those community colleges buildings and other resources to offer the last two years of courses of an undergraduate degree, whether by professors at the remote sites or through interactive television classrooms where the professor works out of the main campus.

"It's a very cost-effective model when you partner up with community colleges," Markee said.

Markee said the 8-year-old NAUYuma education center, a partnership with Arizona Western College in Yuma, has been somewhat of a test case for off-campus education. Overall, there are about 50 locations around Arizona where people can take NAU classes. Twelve of those locations are interactive-classrooms in which professors and students can talk to and see each other even though separated by hundreds of miles.

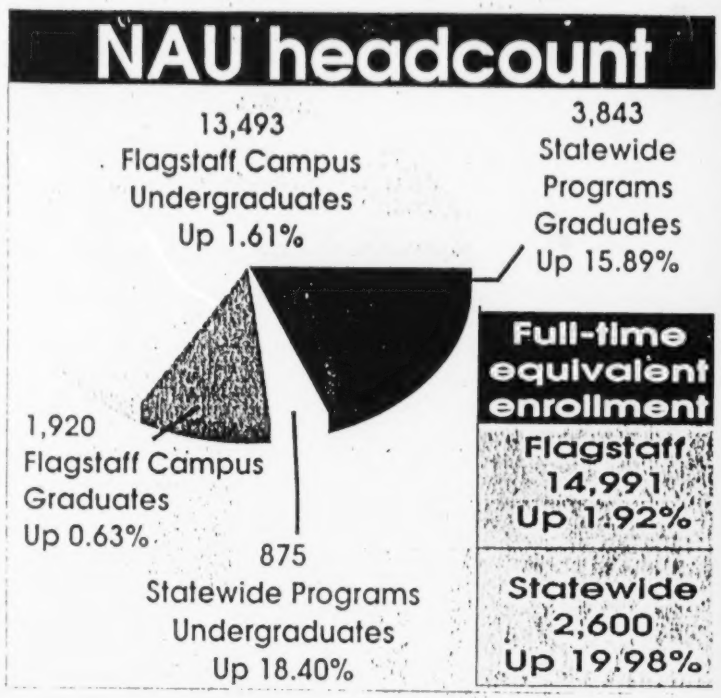
"It's being very favorably received by the communities and the Legislature," Markee said.

NAU's rural growth is no accident — it's been given that statewide mission by the Arizona Board of Regents. Markee said the school is also responsible for enhancing K-12 opportunities throughout the state and providing higher education classes in metropolitan areas that Arizona's other universities don't cover.

Carlson said NAU first offered classes outside Flagstaff 15 to 20 years ago as a program for teachers working on their master's degrees while they taught throughout Arizona. It has since developed into something much bigger.

Now students can earn off-campus degrees in not only education but also nursing, business, liberal arts and possibly criminal justice in the near future. Most of them — 88.1 percent — are part-time students, while 81.5 percent of the off-campus students are studying at the graduate level.

Although remote-site education traditionally has involved older students who have families and jobs, Carlson said the biggest growth area is in the traditional college age student who wants to go to college but can't afford to move away from home and pay for schooling at a university in cities like Flagstaff, Phoenix or Tucson.




While student enrollment on the NAU Flagstaff campus grew b less than 2 percent this fall, off-campus enrollment in NA programs statewide was up more than 16 percent. Most of the st dents outside Flagstaff are part-time and more than 80 percent ar studying at the graduate level. There are more than 50 remote NA course sites statewide

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## EXHIBIT C

## Educational Leadership

## Pilot-Test Cohort Doctoral Programs

# EDUCATIONAL LEADERSHIP

## PILOT-TEST COHORT DOCTORAL PROGRAMS

—

The doctoral program in Educational Leadership at Northern Arizona University has successfully operated for over twenty-five years. During that period it has extended course work and "field-based" programs throughout the region. The Estrella Cohort Program has already been established and is currently on-going. However, there is a need to strengthen the quality of the courses which are offered for residence credit. Therefore, it is important to reduce the number of semester credit hours which have been allowed in the past, and add valuable experiences which students have not been able to gain with the traditional structure and delivery modes. We are confident that the Graduate Council will approve our proposal to improve the planning and sequencing of courses and quality of residency experiences. Otherwise, we will continue to implement the program in the traditional manner.

***Residence Requirements***

*The purpose of our doctoral residence requirement is to provide you with opportunities for conferences, seminars, individual study, and interaction with resident faculty and other graduate students.* (Northern Arizona University Graduate Catalog, 1994-1996, p 54.)

In the recent May meeting, Educational Leadership was asked to respond to questions and clarify its position in three key areas. These are as follows: (1) Number of residence credit hours proposed for each semester or period, (2) "Value-added" experiences of the residency, and (3) Qualifications of the site coordinator. The procedure for answering those questions will be to extract the related sections of the original template, and provide clarification in *italics*.

Factors Related to Residency

- Proportion of on-campus experience: Formal on-campus experiences will involve a minimum of 50% of the total 24 hour residency requirement: i.e., 12 or more hours.

- For students in cohort programs: Courses which meet residence credit are to be limited to the following conditions:

    a) A maximum of 6 credit hours may be earned towards residence credit during the fall and spring semesters. [DELETE: Those 6 hours may be earned during one semester or by taking 3 hours during each of the two semesters.]

    b) A maximum of 6 credit hours may be earned towards residence credit during the three summer sessions. [DELETE: Those 6 hours may be earned during one summer session, two regular sessions, or through a combination of a 3 hour pre-session and one regular session.]

    c) Courses outside of the planned residence courses, but required to be taken by individual students for the purpose of meeting administrative certification, or for meeting other particular (individual) doctoral program requirements, will

not be counted as residence credit.

d) Courses which will be used for residence credit will be limited to those which have been approved within the established program requirements in the areas of foundations, educational leadership, specialization and research.

* *Three (3) hours of residence credit is the maximum number which may be earned in any semester or other regularly scheduled time period.*

* *Residence credit courses which have been planned for the three (3) summer and fall sessions are EDL 600 Leadership Shills, 660 Action Learning Modules, and EDR 720 Research Design. Other courses on the approved doctoral program of studies will be established when all admitted students have had their transcripts fully evaluated, and courses can be properly sequenced.*

Interaction of Faculty & Students

- In addition to attending classes: In addition to classes taught for residency credit, students will be required to have "study group meetings." They will also be expected to receive information and instruction from NAU personnel, i.e., those responsible for Graduate College processes and procedures, format and style review, Institutional Review Board requirements, CEE processes and procedures, etc. *Representatives from the Graduate College will meet with cohort students at the time students are at the candidacy phase of their programs.*

  There are a number of activities which are of value beyond the formal course work; these include, but are not necessarily limited to, the following:

  a) Some of the cohort programs will involve partnership support groups.

  *The Estrella Cohort Group has included a partnership between the Arizona Hispanic Administrators Council and the Center for Excellence in Education.*

  b) Sites will invite local, state and national experts to classes and seminar sessions to provide the most relevant and timely information needed by practicing educational leaders.

  * *A minimum of two presentations from outside experts are required each semester, one by local and state leaders on educational leadership, and the other to address topical issues , i.e., bilingual education, trends in special education, employment practices, etc.*

  c) Qualified local mentors will be identified for guiding each student in his/her respective area of concentration at some local sites. Faculty and coordinators will assist students in identifying resources which they may utilize in upgrading any identified insufficiencies in crucial leadership knowledge and skills areas.

  * *The Estrella program has identified a local site mentor for each student in the program. Qualifications of the mentors include being administrative*

*officials on the superintendency level. These mentors include members from Hispanic and non-Hispanic ethnic groups who are qualified and knowledgeable about issues facing community schools and school districts. Some of the reasons (or tasks) for mentors include assisting students and university faculty in problem solving and trouble shooting.*

d) Pending formal approval by the Area and Graduate College, on-site faculty will be expected to serve on student doctoral program and dissertation committees as appropriate.

* *Some of the administrators who will be recommended to serve on doctoral committees for the Estrella group have been approved by the Graduate College in the past.*

* *Personnel at Arizona State University have provided library facilities, guidance and books on reserve opportunities for NAU Faculty and Estrella students.*

e) Where appropriate, a "buddy system" will be established within each cohort program. In addition, interaction "socials" may take place in person, on ITV, or via simultaneous log in through the Advanced Technological Delivery System (ATDS) to hold "Socratic Seminars," etc.

* *During last year's program, Estrella students met in study groups each week, including inviting local mentors (administrative and academic personnel) to assist them in particular topical or skills areas of concern.*

* *Estrella students divided into groups of 3 to 6 for the purpose of researching components of the scientific approach to knowledge. The Hispanic Administrators Association provided funds and materials to publish this and other documents.*

* *Students working in related topical areas collaborate in researching related literature in preparation for that component of future writing and dissertation requirements.*

* *A minimum of two times per year, students will attend conferences (i.e., the "Bell Curve" conference EDL co-sponsored this year), develop and present position papers and attend professional school administrator's meetings (As an example, Estrella students were required to attend the Arizona School Administrators' conference this year).*

* *On two occasions, students organized socials and coordinated meals to celebrate successfully making progress in their application process and course work.*

* *To assure quality interactive experiences, a minimum of one Socratic seminar will be conducted.*

f) Some cohorts may combine and take courses at one another's sites. They will also have the opportunity to interact with other students and faculty when taking their on-campus residency (and other) course.

* *As cohort groups are added, ITV and other telecommunication technology (i.e., ATDS) will provide opportunities to interact with other groups. Interaction with groups will occur a minimum of 2 times annually, including other sites; i.e., Estrella, Flagstaff, Yuma, San Diego, Moreno.*

* *The course ischeduled for the fall will include Estrella and NAU Yuma students.*

* *Due to expanded experiential opportunities, residency is greatly enhanced for cohort groups, much beyond what has been available for traditional (NAU Campus) program students.*

g) To enhance the connection between theory and practice, all courses held at the sites will include a component which requires meaningful application and reporting related to the connection of content, knowledge and skills to the reality of their community and school work assignments.

* *Individual study has been enhanced by direct student application of theoretical course content to actual practice on specific administrative tasks.*

Resident Faculty Coordinator

- The "resident faculty advisor," or "coordinator," will have the responsibility as the chief organizer for his/her particular assigned site. This individual will have the opportunity to work with Continuing Education and regional university coordinators, students and officials. A major responsibility will be to assure that university processes and procedures are followed, and that student program advisement is accurate, timely and of high quality. Responsibilities will include evaluating program and faculty activities and making recommendations related to any needs for improvement. Another general expectation will be to provide public relations in the interest of the "university dispersed."

    * *The resident faculty coordinator is (and will continue to be) a regular full-time faculty member on the NAU campus. For the Estrella start-up period, coordinators include Professors Galas, Miles and Packard.*

Thank you for reviewing this document; I continue to be open to any further questions members may have (Dick Packard -- at 3-5852).

Estrella Cohort Grid

| A. Course | | | |
|---|---|---|---|
| 1. No. of Hrs on/off campus | 12/12 program proposed for residency | Students may take more hours but not for residency | 0-3 hrs taught by site appointed faculty |
| 2. What type of courses | Established doctoral program courses | Foundations - 15hrs<br>Specialization - 30hrs | Leadership Skills 15hrs<br>Research - 30hrs |
| 3. Who teaches off campus courses | 3/24 model will be utilized | Note: Off campus mentors-current school administrators have vol. to asst. students | 21 to 24 residence hours taught by on-campus faculty |
| 4. Courses to be taught on campus | SS I & II 1995<br>EDL 600, EDL 660 | Planning progam needs<br>*Foundations<br>*Specialization | Planning program needs.<br>*Leadership Skills<br>*Research |
| B. Library access and orientation | Coordination with ASU/W has been accomplished. NAU Lib. orientation has been provided | Az. Hisp. Asso. is in the process of purchasing supple- mental books for student use. | Supplemental resources housed in the Issac Sch. Dist. Admin Cent. |
| C. Provisions for extended student contact, activities or seminars etc. | It has already been discussed with students and Az. Hisp Asso partner that arrange visits would take place to NAU campus | * Discussions of EDL Cohort seminar is being planned<br>* Students are encouraged to be members and participate in Az. Sch. Admin. Asso. | Estrella students participate in the Az. Hisp. Asso. Conf. in the Fall and Spring |
| D. Provisions for extended timely contact with campus faculty and professors | The intent of EDL is to utilize the full time faculty as resources permit to teach or lecture at cohort classes | On-campus faculty will teach a minimum of 21 hours with additional contact through added seminar programs | On-campus faculty will teach the site courses as well as the on-campus courses |
| E. Provisions for timely contact with the Graduate College (University Policies) | As part of the orientation prog. the Grad. Col. represen-titives will be asked to participate | Other college repre-sentitives will be requested on a as need bases. | Graduate Collge applications are being processed. |
| F. Policies on Comps, committees, etc | The current NAU standards for comps will be upheld | Committes will include approved site person-nel. | Committee chairs or co-chairs must include on-campus faculty |
| G. Others Research | Estrella students have identified research topics that relate to both the Hispanic community and Educational Administration | School districts associated with Estrella students are prepared to assist with these research projects. | On-site applied and field-work research will be encouraged (See attached research documentation) |

# EXHIBIT D

## Annotations and Quotations of Research Findings Related to the Effectiveness of Cohort Programs and Field Work Study

# ANNOTATIONS AND QUOTATIONS OF RESEARCH FINDINGS RELATED TO THE EFFECTIVENESS OF COHORT PROGRAMS AND FIELD WORK STUDY

A

Document for Planning,

Research and Evaluation of

Approved Cohort Doctoral Programs

by

Dr. Richard D. Packard, Professor

Educational Leadership, Research & Foundations

*A Document to be Presented to the Graduate Council*

*April 27, 1995*

R.D. Packard, April 95

# ANNOTATIONS & QUOTATIONS OF RESEARCH FINDINGS RELATED TO THE EFFECTIVENESS OF COHORT PROGRAMS & FIELD WORK STUDY

## Overview

In response to the Educational Leadership proposal to plan, implement and study the effectiveness of potential pilot-test cohort programs at the doctoral level (including some local-site residency courses), a preliminary search of the literature was conducted. Beyond available reports on internal studies of ongoing cohort programs at the undergraduate and graduate levels which are presently functioning within the EDL Area and the Center for Excellence in Education, there was a need to review studies which will become a part of the long-range evaluation of the effectiveness of any approved programs.

In the past, most private and public educational institutions and school operations are located in communities or local areas where the students reside, and instruction and learning usually occur in group settings. This was not the traditional case with universities. Although the major move for universities to extend programs outside their campus boundaries is relatively new (with the exception of foreign-based activities), programs like NOVA, the University of Phoenix, and many others are rapidly expanding to meet that need. There are many change factors which are being addressed, i.e., expanded technology and communication, year-round scheduling, library accessibility, issues of research validity, etc.

There presently is considerable pressure for Northern Arizona University to address these extended-community demands, and the mission directions are clearly focused on the "educational" component of this University. While education has considerable experience in offering classes throughout the region, as do other states and universities, offering cohort programs in specific community locations does not have a broad-based history of experience or study within Arizona borders.

Database Search: This preliminary search of the database included all of those sources retrievable from the Cline Library at NAU. The bibliography of resources and reported findings are from the following areas: cohort (group, groups, program, programs), and higher education. There does not appear to be a substantial amount of "significant" research or in-depth information available related to the academic level of functioning (or advantages) of the cohort concept. However, this shortage only supports the "pilot-test" study rationale to provide a greater depth of knowledge of the impact of these organizational processes and procedures.

References: Sources are cited in priority order from those which appear to be most relevant to those of least associative value, as follows:

Weise, K. R. (1992). Through the lens of human resource development: A fresh look at professional preparation programs. Paper presented at the Annual Meeting of the University Council for Educational Administration (Minneapolis, MN, October 30-November 1, 1992). (ED355667)

*With the national focus on school improvement, universities are being asked to reevaluate graduate educational administration programs. In 1988, the University of Houston's Department of Educational Leadership and Cultural Studies (ELCS) implemented a pilot program to experiment with a number of reform strategies. The Principals" Reflective, Experiential Preparation (PREP) program was a highly personalized, self-paced curriculum driven by diagnostic assessment data that identified individual values, beliefs, preferences, abilities, behaviors, and styles. This report examines the relationship between theory and real-life conditions in the PREP program. Document analysis and interviews with 29 people examined key program elements: philosophy and goals, nomination and selection, diagnostic assessment, individualized education plans, nontraditional course offerings, supplemental seminars, internships, mentor ship, reflective practice, and cohort groups. Several changes were identified to facilitate reform in administrator education programs. Reform will require major policy changes, advanced planning, cohort group utilization, innovation and tradition integration, a "school-within-a-school" approach, personalization, evaluation, cost-benefit analyses, power and authority realignment, collaboration, leadership and personal profiles, adult learning theory, and mentor programs.*

Barnett, Bruce G., & Caffarella, R. S. (1992). The use of cohorts: A powerful way for addressing issues of diversity in preparation programs. Paper presented at the Annual Meeting of the University Council for Educational Administration (Minneapolis, MN, October 30-November 1, 1992). (ED355667)

*Educational administration preparation programs increasingly are using cohorts, particularly as a way to teach diversity issues. . . . The special characteristics of adult learning, the need for acknowledgement and use of experience, the different learning techniques, the active involvement in learning, and the need for affiliation can all be integrated in cohorts. Gender, ethnicity, and social class are important considerations in creating cohorts. . . . Reflective seminars integrate theory and practice and allow students to share insights from their work and other experiences. . . . Finally, many cohorts continue contact with each other long after they have left the program.*

Geltner, B. B. (1993). Collaborative action research: A critical component in preparation of effective leaders and learners. Paper presented at the Annual Meeting of the University Council for Educational Administration (Houston, TX, October 29-31, 1993). (ED353971)

*Fifteen graduates from four cohort groups participated in a study of the program. Data were collected through individual interviews and analysis of students' reflective papers, critical incident reports, and audiotapes of seminars. Students reported that the program: (1) transformed them from receivers of research to creators of new knowledge, action, and change; (2) enhanced their commitment to act as change agents in schools; (3) deepened their commitment to collaboration; (4) deepened their understanding of the complexities of the change process; (5) enhanced their confidence; (6) increased their awareness of the power of reflection; and (7) created an expressive, permissive learning environment. Collaboration, risk taking, knowledge, and understanding were linked; theory guided practice; and action served as a basis for reflections and heightened awareness. Findings suggest that collaborative action research can transform the graduate-preparation experience and help to prepare educational administrators who will draw on their own experiences to create dynamic, vibrant future learning communities.*

Collet, L. S. (1989). Improving faculty and dissertation research through problem-centered instruction. Paper presented at the Annual Meeting of the University Council for Educational Administration (Scottsdale, AZ, October 22-29, 1989). (ED323599)

*It is a common public perception that schools are failing to perform their fundamental mission; in the public eye, the responsibility for this failure lies with the administrators leading the schools. Consequently, there has been a litany of criticisms of the programs that prepare administrators, particularly programs located in major research universities. . . . Problem-Centered Instruction (PCI) provides an alternative approach to administrator selection and training that focuses on the collaborative solution to practical field problems. Key concepts of this instructional method include recruiting students in a cohort group that will proceed though training as a unit; focusing instruction in each subject area on the implications of that content for the thematic problem; and using computer conferencing for continuing collaborative problem-solving, for class discussions of substantive issues, and for written class assignments. In April 1989, the University of Michigan field tested an educational administrator training program based on the PCI approach; currently, a cohort group of 19 has been admitted into the experimental program.*

Andrews, R. L. (1994). Leaders for tomorrow's schools: A study of differences between graduates of traditional/classroom-based and practicum/internship-based programs. (Doctoral dissertation, University of Wyoming). Dissertation Abstracts. (Order No: AAC 9329227)

*The purpose of this study was to examine the differences of traditional and GoodLEADer graduates of principal preparation programs at the University of Wyoming. Specifically, this study was designed to measure reflectivity in the decision-making process and the ability to articulate a personal vision. Much of the current administration preparation literature suggests that a structured school-university relationship, with a group of cohort students and full-time internship under the direction of a mentor principal, would provide better training for the pre-service administrator. . . . Empirical evidence from this study supports the contention that field-based educational leader training programs such as GoodLEADer are more likely to produce graduates who employ more reflectivity in the decision-making process. . . . GoodLEADer graduates consistently displayed appropriate use of personal vision terminology and application. In addition, GoodLEADer graduates rated their preparation as "excellent" and cited the cohort group and the full-time internship with the mentor principal as strengths of their program.*

Barnett, B. G., & Muse, I. O. (1993). Cohort groups in educational administration: Promises and challenges. Journal of School Leadership, 3(4), 100-115.

*To create a more supportive and collegial learning environment, many educational administration preparation programs are using cohort groups of students. This article traces the development of cohort groups by describing collegial learning and then links these practices to principles of adult learning and development.*

Nelson, W. A., & Disch, J. A. (1993). The development of professional and social relationships as a result of cohort group instruction. Catalyst for Change, 23, 14-17. [This journal is unavailable at the NAU Cline Library. The search continues.]



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Gardner, R. E. (1993). An investigation into the perceptions of graduates of an executive MBA program (MBA Graduates). (Doctoral dissertation, Michigan State University). Dissertation Abstracts. (Order No: AAC 9406495)

*Purpose: To determine if graduates of Michigan State University's Advanced Management Program believe that their career and family life have been enhanced by their MBA degrees? Also, to what degree did they feel the program met their expectations? Lastly, were the principles of adult education applied in the program; and, if so, did this enhance their educational experience? . . . (4) Students appreciated those aspects of the program that reflected the principles of andragogy. Of special importance was the power of the cohort group to educate and motivate.*

Reynolds, Katherine. C. (1994). Students in cohort programs and intensive schedule classes: Does familiarity breed differences? Paper presented at the Annual Meeting of the Association for the Study of Higher Education (18th, Pittsburgh, PA, November 4-7, 1993). (ED3651175)

*Findings indicated that cohort programs, either with or without intensive schedules, appeared to provide higher levels of cohesiveness and group interaction than more traditional programs.*

Hindle, B. P. (1993). The "Project": Putting student controlled, small group work and transferable skills at the core of a geography course. Journal of Geography in Higher Education, 17(1), 11-20.

*Describes how a cooperative group project has become a foundation of the first two years of a three-year program in college-level geography. Discusses the origin, development, and topic selection for each of the cohort groups working in the program. Asserts that the program has been favorably received by both students and faculty members.*

Gomez, M. L. (1990). Learning to teach writing: Untangling the tensions between theory and practice. National Center for Research on Teacher Education, East Lansing, MI.

*This paper tracks the changes in beliefs and dispositions regarding the teaching of writing of a cohort group of prospective secondary teachers during their graduate year of teacher preparation. Changes in the prospective teachers' beliefs regarding the knowledge they need to teach and the ways in which learners who differ in race, social class, and writing skills benefit from different curriculum and instruction.*

Ludlow, B. L., & Winke, W. D. (1987). Linking programs and resources for rural special education. Proceedings of the Annual National Conference of the American Council on Rural Special Education. West Virginia. (See EC 202 583)

*The program serves trainees in cohort groups at multiple sites in various geographic locations in West Virginia. The program permits delivery of coursework instruction and supervision of practicum experiences by field-based personnel in cooperation with university faculty. . . . Program evaluation data indicate that this on-the-job program is successful in preparing rural teachers of students with severe/profound handicaps and reducing the critical teacher shortage in West Virginia.*

Caffarella, R. S., & Others (1992). Delivering off-campus instruction: Changing roles and responsibilities of professors in higher education. Continuing Higher Education Review, 65(3), 155-167.

*Interviews with 22 faculty teaching in off-campus programs showed (1) teacher role changed because of compressed time frame, student expectations, and existence of cohort groups; (2) professional and personal satisfaction diminished because of time pressures, diminished interaction with on-campus colleagues; and (3) faculty needed consistent administrative support for scheduling, equipment, and recognition among others.*

Applegate, J. H., & Shaklee, B. (1988). Some observations about recruiting bright students for teacher preparation. Peabody Journal of Education, 65(2), 52-65.

*.. . describes the development, implementation, and refinement of a plan for identification, recruitment, and selection of cohort groups of able teacher education students. The nature and structure of an alternative teacher education program designed to attract and retain academically talented students are also discussed.*

Catalano, A. F. (1994). High involvement teacher education: Partnerships in progress. Paper presented at the Annual Meeting of the American Association of Colleges for Teacher Education (Chicago, IL, February 16-19, 1991). (ED#66586)

*Antioch University (Seattle, Washington) established its Teacher Certification program in 1991 with several goals in mind: to provide adult learners with a program designed around their special learning needs, to address critical teaching and learning issues in urban classrooms with diverse ovulations, to encourage collegial attitudes and behavior in a profession where isolation is the norm and to prepare new teachers to serve as change agents in schools. The program is intentionally small, admitting 10-25 students as a cohort group each January with certification awarded the following December. The year-long program, offering an alternative approach to K-* certification, is designed for mid-life adults who possess bachelor's or master's degrees, have been in the work force, and who wish to work with children as classroom teachers.*

Dewey, F. D. (1992). Perceptions of the teaching profession by academically talented teacher education graduates. (Doctoral dissertation, Kent State University). Dissertation Abstracts. (Order No: AAC 9224483)

*Based on the findings from the present study, the subjects reported that the teaching profession was challenging and demanding. Subjects indicated that they observed social and emotional problems in their students. The subjects perceived the following elements of the ATTEP program to be beneficial: The early entrance to schools, having a mentor, the flexible course of studies, having a small cohort group, and having seminars that were research based.*

Hicks, A. M. (1995). Perceptions of shared decision-making by team members who have participated in the process in a school district. (Doctoral dissertation, Loyola University of Chicago). Dissertation Abstracts. (Order No: AAC 9416955)

*Data analysis led the researcher to conclude that: Team members believed there is little authority to make changes in schools; team members primarily derived the greatest support from interaction with cohort groups; team members were encouraged by involvement in*

*building visions in the schools and discouraged by a lack of time and communications with non team members; staff attitudes prevented the development of curriculum and instruction; student standards were addressed more readily than were teacher standards; and a collegial atmosphere was the most positive result of the shared decision-making process in school improvement.*

Black, A., & Ammon, P. (1992). A developmental-constructivist approach to teacher education. Journal of Teacher Education, 13(5), 323-335.

*The University of California's Developmental Teacher Education program uses Piagetian developmental theory and research for preparing elementary teachers. The article describes the two-year postgraduate program, which features small student cohorts, multiple diverse student teaching placements, coursework that addresses key topics repeatedly and hierarchically, and master's projects on teaching-learning issues.*

Shen, J. (1994). A study in contrast: Visions of preservice teacher education in the context of a professional development School. Paper presented at the Annual Meeting of the American Association of Colleges for Teacher Education (Chicago, IL, February 16-19, 1994). (ED368677)

*Findings from the study indicate that there were three significant differences between the vision of the PDS mission. The study's findings suggest that successful implementation of the PDS model requires more interaction between school faculty and university faculty to develop a shared vision.*

Cherem, B. F. (1995). A connected classroom in an adult B. A. Degree-Completion Program: Perceived effects on three women's development. (Doctoral dissertation, Michigan State University). Dissertation Abstracts. (Order No: AAC 9223178)

*. . . Another finding was that the distinctive contribution which this curriculum, as to its connected cohort group format. The values-driven curriculum of a Christian, liberal arts college was the kind of setting to explore areas of communicative learning. . . . Two students who seemed to experience communicative learning (enduring, transformational changes) were Jan and Guy, both "talkers" in large groups discussions, an essential to such change.*

Background Research & Reports Related to Cohort & Field Work Programs

During the past three years, Dr. Robert Holloway, Dr. Mike Miles and Dr. Jim Davis have implemented undergraduate and graduate cohort programs. Dr. Holloway can make his evaluation research study available on request. The results of this study indicated several advantages of such cohort program regarding access and high-level content quality. Dr. Miles has implemented three cohort programs on the master's degree level. He has a recent report on their positive successes. Dr. Jim Davis has recently reported on successes of the undergraduate education partnership program conducted by the CEE Instructional Leadership Area.

Reference Related to Field Work

Everhart, R. B. (1988). Fieldwork Methodology in Educational Administration. In Norman J. Boyan (Ed.), Handbook of Research on Educational Administration

(pp. 703-727). New York: Longman.

*There is little doubt that fieldwork has gained considerable favor and respect in the study of educational phenomena since the mid-1960s" (Magoon, 1977; Roberts & Akinsanya, 1976; Smith, 1978; Wilcox, 1982; Wilson, 1977; Wolcott, 1995). "Studies of the leadership, management, and organization of schools are no exception to this trend" (Wolcott, 1985). Falling under the various labels of ethnography, participant observation, fieldwork, qualitative methods, case studies, and naturalistic inquiry, these approaches are all attempts (with varying emphases) to understand educational processes in situ.*

*In discussions of fieldwork, and construct meaningfulness of study in a social context, --it "is derived from, or arises out of, the social interaction that one has with one's fellows" (Blumer, 1969, p.2).*

*...fieldwork is process oriented. The strengths of fieldwork lie in its attempt to examine events and meanings as they unfold and develop and to understand the contingencies that influence the manner in which such events evolve.*

*A ...characteristic of fieldwork is its holistic orientation. That is to say that not any phenomenon can be isolated and studied in terms of a simple linear relationship but must be studied in context. ...events and their meaning are multidimensional rather than unidivensional and consequently must be examined as intricate social fabrics woven together to produce a greater whole.* [Fieldwork is *holistic* in nature -- it has not been shown to be productive to study "organizational components in isolation" (Packard -- Related to the holistic and

integrative needs of districts and organizations -- several policy and evaluation research reports can be supplied which date from pre-1980 to the present).]

*Fieldwork, then, is not a method but a role that allows the researcher to witness and experience phenomena as they occur, utilizing multidimensional techniques (Jick, 1979; Sieber, 1973) to aid in the collection of information about those phenomena.*

*In summary, fieldwork entails the active involvement of a trained observer in the lives of members of a setting for purposes of understanding life in the terms within which participants live out that life. The essential quality that emerges from analysis of phenomena from the actor's perspective, as those phenomena develop within a context emphasizing multidimensionality, can emerge only as the researcher participates in the ongoing events characteristic of that setting. The strength and appeal of such research rests on the potentiality for accurate descriptions and analysis of "what is."*

*...more specifically, the particular advantage of fieldwork, and perhaps a strong criterion for choosing it over other forms of research, lies in its emphasis on construct validity (Rist, 1977)--the meaning of events or situations to those individuals who engage in them. In the area of policy research and research on educational administration, fieldwork is unsurpassed for attaining this validity.*

**EXHIBIT E**

**"As the Modem Turns:"**

**Successes of the Advanced Technological Delivery System (ATDS)**

**of Graduate-Level Instruction**

# "As the Modem Turns:"
# Successes of the Advanced Technological Delivery System (ATDS) of Graduate-Level Instruction

by

**Mary I. Dereshiwsky, Ph.D.**
**Assistant Professor,**
**Educational Leadership & Research**
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**Northern Arizona University**

*Cyberspace*. The very term conveys images of a cold, impersonal, frightening black hole of existence. Who would have imagined that graduate-level courses delivered via computer modem -- and in research and statistics, no less! -- would turn out to be perceived as highly individualized, enjoyable learning experiences?!

Yet, these have been precisely the results of a leading-edge method of instruction known as the Advanced Technological Delivery System (ATDS). Begun in the summer of 1994, courses in cyberspace have turned out to be a popular and highly sought-after alternative to the traditional classroom environment. This paper presents a brief overview of the ATDS: how it works, how it is perceived by students, and what's next on the horizon of cyberspace instruction.

## "To Boldly Go Where No One Has Gone Before:"

### The Origins of the ATDS

The ATDS began as the brainchild of my teaching and research partner, Dr. Richard D. Packard. He recognized the potential of cybercourses to fill the need of some of our graduate student subpopulations at Northern Arizona University. These graduate students at the Center for Excellence in Education are scattered in diverse, often remote and geographically isolated locations throughout several Western states. Traveling to regularly scheduled classroom meetings, even to an ITV laboratory, could be burdensome for them. "Special delivery of course content" to the doorstep of these students seemed to be an innovative solution to their remoteness and isolation from the traditional classroom environment. This instructional technique also held particular promise for our physically challenged students, as well as those whose unpredictable work and travel schedules often interfered with fixed class meetings.

The audience for this unique method of instructional interaction was in place. It seemed like a great idea. But -- how in the world would we make it happen?

Selecting Our On-Ramp to the Information Superhighway

I eagerly accepted Dr. Packard's invitation to join him in developing this highly innovative instructional experience. As I thought about how to make this instructional experience become a reality, my primary concern was user-friendliness. I was well aware of the traditionally fearsome nature of research and statistics. The last thing I wanted was to compound students' fear by adding a hieroglyphic-y, tough-to-decipher computer interface. Rather, I wanted the computer part to be as easy as possible. My goal was to have the computer part be so easy that it functioned as a 'quick gateway' into the course material itself.

After much thought, I opted for the popular commercial computer bulletin board known as America Online (AOL) as our primary computer medium. For one thing, AOL works on every kind of computer platform: Macintosh, Windows, or MS-DOS based. For another, it is very 'point-and-click intuitive.' AOL users point and click to pictorial icons of familiar objects to move around in cyberspace. The icons replace the often-baffling UNIX programming code that up until recently has been the standard language of the Internet. Furthermore, AOL now offers an equally user-friendly 'gateway to the Internet.' Its subscribers can do most things that Internet users can do, but with far less hassle. There is a nominal charge to subscribe to AOL: $ 9.95 for five hours a month of usage time, with additional hours billed at $ 2.95 and prorated per minute. However, on balance it is considered a 'small price to pay' for such a visually appealing, easy-to-use computer interface. For these reasons, I selected AOL for our instructional cybercourse experience.

"Charting Our Course:" How ATDS Instruction Works

[Insert Figure 1 about here]

Figure 1 (Dereshiwsky, 1995) illustrates how teaching and learning occur by computer. Students subscribe to AOL and also register for the course(s) through the usual means. Once online, I'd transmit ("upload") our course syllabus to each student. This would enable him/her to practice receiving ("downloading") it.

After the student has done this successfully, I'd then transmit a series of ten "lesson packets." Each lesson packet is equivalent to a chapter in a textbook, or a set of class notes and handouts from a traditional live session. A related assignment appears at the end of each packet. Students are welcome to work on the assignments individually or in groups, as they prefer. They would transmit the completed assignments to me or e-mail me any questions they might have before proceeding. I would annotate my comments and

suggestions in bold/italic font to make them stand out, and return the annotated assignments to the students.

In addition to this individual interaction, we also conduct a series of periodic live sessions. I create a place in cyberspace known as a "chat room" on AOL. We agree on a day and time for all of us to log in simultaneously. Students navigate to this chat room by typing in its name. What is typed by one is seen by all. The transcript of the interactive session can be saved as a text file, akin to audiotaping a live class discussion. Students use the chat room opportunity in the same way that they would a group class meeting: to ask questions and offer comments and suggestions to one another.

I also compose and disseminate a 'cybernewsletter' once or twice a week. It contains special interest items such as introducing and welcoming new members to our network; job announcements; dissertation defenses; new jobs; new babies; etc. It is also a highly efficient way to convey general information such as times, dates and locations of doctoral comprehensive examinations. I close each newsletter with a positive-thinking, inspirational quotation or anecdote.

Where We've Been and Where We're Headed

We began the cybercourses as a pilot test in the summer of 1994. I offered two courses, Introduction to Research and Introduction to Statistics, to an intact cohort group of incoming doctoral students from the Las Vegas, Nevada area.

Due to overwhelming student kudos for this method of instruction, the ATDS has expanded to include the following courses: Research Design, Qualitative Research & Analysis Procedures, Dissertation Seminar, and individual dissertation advisement. Plans to add Evaluation Research, Survey Research, and Advanced Quantitative Analysis Procedures are in the works.

Perceived Benefits of the ATDS Instructional Experience

Why have these courses been so popular -- and the benefits of cyberspace such a delightful surprise? A formative evaluation (Packard and Dereshiwsky, 1994) revealed a number of distinct benefits of ATDS instruction. They are summarized under the following areas:

Perceived Benefits of ATDS as a Whole

* Each student gets individualized attention
* ATDS allows for flexibility in scheduling
* Good way to become computer literate as well as learn research or statistics
* Fun being part of a new, innovative instructional experience

Perceived Benefits of Course Materials (Lesson Packets)

* Clear

* Well organized
* Easy to follow
* Contained lots of relevant examples
* Humorous; fun to use
* Equivalent to traditional textbooks in terms of quality and rigor

Perceived Benefits of ATDS Instructor

* Enthusiastic
* Efficient (same-day turnaround of assignments and papers)
* Caring & sensitive
* Committed to the technology
* Student-oriented
* Knowledgeable in research and statistics

Surprise, surprise -- far from perceiving the experience as impersonal, students praised the individual attention they get from their instructor in this medium. "I feel like I'm forming a one-to-one partnership with you," shared one student. Furthermore, they were always aware that there was a 'real, live and caring person' behind that seemingly inanimate computer screen. Students acknowledged the rapid turnaround of questions, papers and assignments. If they ever needed help, "You're only a mouse-click away," another student observed. Perhaps the biggest surprise of all was how "user-friendly" traditionally difficult course material such as research and statistics became -- amazingly, without the face-to-face interaction. Students appeared to master the concepts just as well, if not in fact better, than in the traditional live group classroom environment.

Students also appear to value the 'prestige factor' of membership in the cybernetwork itself. We now number over 100 members in nine states and Canada. Our membership includes current and graduated master's and doctoral students, as well as faculty members here at Northern Arizona University and in four other higher educational institutions. As a hallmark of its success, students generally elect to keep their membership in our network, whether via AOL or Internet, even after they have completed a given course requirement. They look forward to getting the newsletters and value their social bond with our other network members.

"May the Force Continue to Be With Us:"

Future Directions for Cyberspace Instruction

As mentioned earlier, the ATDS has expanded to include dissertation advisement and a wider array of graduate-level research course offerings. The success of the ATDS has attracted the attention of faculty members here at Northern Arizona University and other institutions. They see it as a potentially valuable model for instruction in their respective

subject areas. Mentoring other faculty in the applications of the ATDS is also on the horizon.

In summary: the future of ATDS looks bright indeed. As stated by one student (emphasis in original):

> Teaching by modem is -- or can be -- the "wave" of the future in reaching out to a variety of students in a variety of geographical locations throughout the WORLD. The course selections are infinite as to what can be taught by modem -- if the instructor is dedicated, well organized, expert...and caring...

This novice cyberspace commander wholeheartedly concurs -- and considers herself truly fortunate to have been a part of this leading-edge method of instructional delivery. The view from cyberspace continues to be breathtaking!

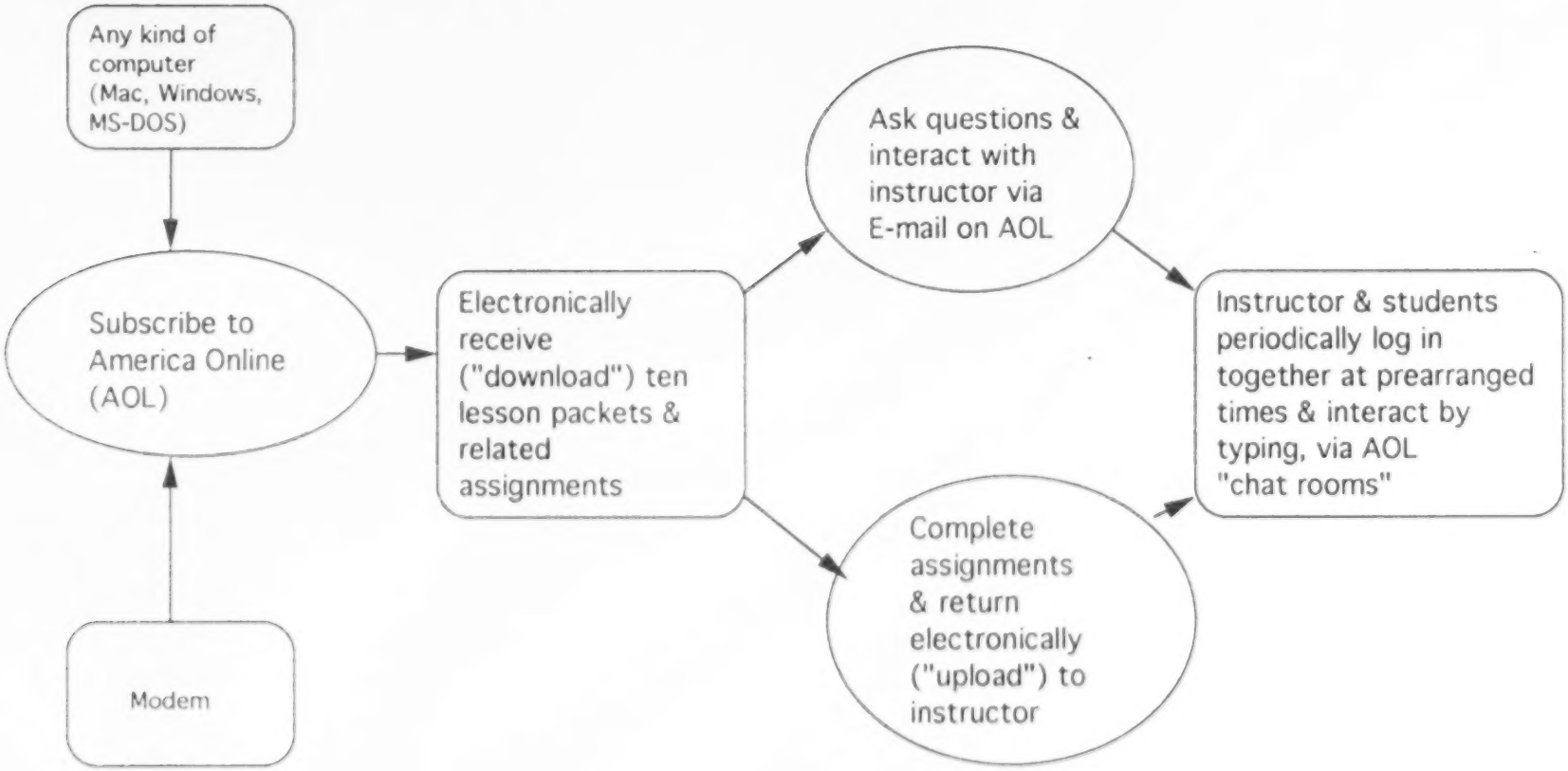
## References


Dereshiwsky, M. I. (1995). *Courses in cyberspace: Successes of the Advanced Technological Delivery System (ATDS) method of graduate student instruction.* Education at a Distance Journal, 9#7, 16-19.

Packard, R. D., and Dereshiwsky, M. I. (1994). *Formative evaluation of ATDS instructional method.* Document presented to the Center for Excellence in Education, Northern Arizona University.

Figure 1.

ATDS Courses: Steps in the Teaching/Learning Process


Any kind of computer (Mac, Windows, MS-DOS)
Subscribe to America Online (AOL)
Modem
Electronically receive ("download") ten lesson packets & related assignments
Ask questions & interact with instructor via E-mail on AOL
Complete assignments & return electronically ("upload") to instructor
Instructor & students periodically log in together at prearranged times & interact by typing, via AOL "chat rooms"

# Courses on Computer
## One Year Pilot Test Successful

**Dr. Mary Dereshiwsky** formerly entered the realm of cyber heaven when the CEE Curriculum Committee voted to accept the proposal put forth by professor Richard Packard and herself to allow five graduate-level courses to be taught via computer and modem during the Summer of 1994. The courses taught included Beginning and Advanced Quantitative Data Analysis, Introduction to Research, and Research Design. Professor Dereshiwsky taught all five courses using the America Online (AOL) computer bulletin board.

Student opinions on the use of the new course delivery vehicle were collected with the help of two survey methods: 1) The standard NAU student paper-and-pencil evaluations; and 2) A formative qualitative evaluation done by Dr. Packard. While the standard evaluation results were positive, the qualitative evaluation revealed many interesting student benefits. These perceived strengths are shown below in the cube-shaped diagram. The cube represents the integration of the three emergent components of this means of course delivery: the delivery system itself, the instructor, and the materials.

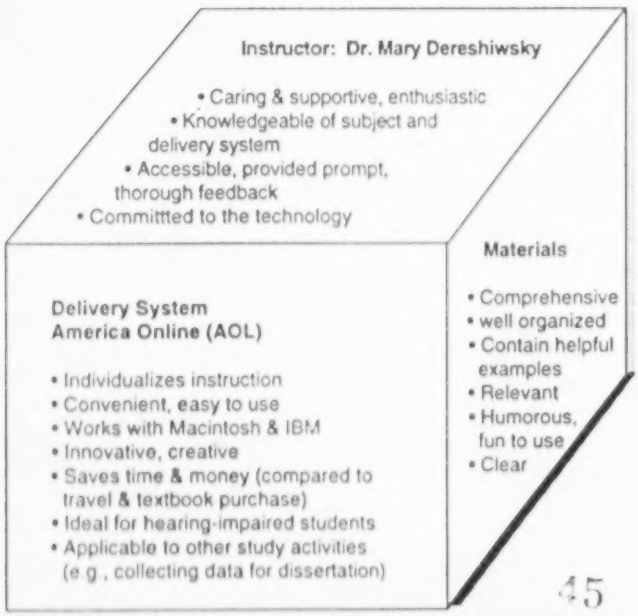
# EDL 732 Goes Modem
## Socratic Seminar Lives!

**Dr. Nancy Schilling** was the first EDL professor to offer a course with the use of an advanced technological delivery system. She used the NAU-VAX system to communicate with students taking EDL 735 (School Finance for Administrators) during fall 1992 and subsequent semesters.

This spring Professor Schilling is teaching EDL 732 (Leadership Applications of Technology) using AOL. "This system is wonderful. It's the easiest one I have ever used," said Schilling who is an avid believer that students benefit as much by learning to use the equipment as by participating and absorbing content.

"I'm conducting a Socratic seminar on the network. We have two one-hour chats a week," she said. With a "chat room" full of leaders, initiating dialogue is not a problem. "One of the things it has taught us is that we all can't all talk at once. We have to wait and be polite." The written assignments students complete are sent to her electronically. She reads and responds to the papers without having to print a copy. Two face-to-face meetings are planned for the semester.

## Cubic Integration: Instructor, Materials, and Delivery System


Instructor: Dr. Mary Dereshiwsky
• Caring & supportive, enthusiastic
• Knowledgeable of subject and delivery system
• Accessible, provided prompt, thorough feedback
• Committted to the technology
Materials
• Comprehensive
• well organized
• Contain helpful examples
• Relevant
• Humorous, fun to use
• Clear
Delivery System
America Online (AOL)
• Individualizes instruction
• Convenient, easy to use
• Works with Macintosh & IBM
• Innovative, creative
• Saves time & money (compared to travel & textbook purchase)
• Ideal for hearing-impaired students
• Applicable to other study activities (e.g., collecting data for dissertation)

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Registration for courses taught by modem is that same as it is for other NAU courses. In the course schedule under the course title are the words, "VIA MODEM ONLY."

## How to Get on the Net

Access to the internet is "free" for NAU students who have a DANA account number. To get an account number visit the Information and Technological Services building (located south of the library on the same side of Knoles Street) and tell the person at the information counter that you want a "Dana Account." You will have to sign a one-page ethics statement and wait two days. Then return to the building and pick up your new DANA login code, password, and instruction booklet. For further information call Tobias at 523-6158.

# Mary D's Cyber Network

## Let Your Fingers Do The Talking

Professor Dereshiwsky has assembled a network of past and present EDL doctoral students who communicate with each other by using America Online, VAX, DANA, or any of the available bulletin board services that allow access to the internet. The network now extends across six states and includes over 70 people. Electronic communication greatly facilitates the sharing of knowledge, experiences, and documents, while simultaneously developing collegiality.

The subscription list continues to grow. Each time a person joins the "club," a brief description of Mary's association with that person is sent out to all members. The new person's e-mail address is provided so that contacts can occur.

"It is an awesome thing," said professor Dereshiwsky, "to imagine a student from San Diego posing a question or sharing an idea with another student in Utah or New Mexico in seconds: more rapidly, inexpensively and efficiently than any other means."

Dr. Dereshiwsky invites anyone who is interested to join the club by sending a message to her e-mail address: AFCMaryD@aol.com.

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### Dereshiwsky Becomes AOL Consultant

The America Online (AOL) corporation has formally recognized professor Dereshiwsky's outstanding contribution to leading-edge instructional delivery by promoting her to *America Online Forum Consultant*, the first user rank in a hierarchy of three. The next highest user rank is *Assistant*, and then *Leader*.

As a result of the promotion, professor Dereshiwsky was rewarded with a free AOL account and new screen name: AFC Mary D.

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# Educational Leadership Faculty E-Mail Address List

Many e-mail systems are letter case sensitive, so make sure you type the address exactly as it is shown below. Also, mail sent to any of the e-mail addresses below arrive on a professor's computer at CEE. He or she may not be able to reply to you because he or she may not have an internet account... yet.

| EDL Professors | E-mail Addresses |
|---|---|
| Bartell, Dr. John | john_bartell@mail.cee.nau.edu |
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| Carreiro, Dr. Keith | Keith_carreiro@mail.cee.nau.edu |
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